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Subject: Fw: 2 diesel car stories worth noting
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I assume the Ricardo/UBS report may be of interest.

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Subject 2 diesel car stories worth noting

In case you are too busy with CA waiver issues to notice Jack Peckham's latest, these are worth talking about sometime...

NEWS UPDATE: Ricardo/UBS Report Sees Light-Duty Diesel 'Boom' Coming to U.S.; Cheaper than Hybrids for CO₂ Regulation

A joint report by automotive engineering consultancy Ricardo and investment banker UBS foresees a "boom" in U.S. demand for light-duty diesels, outstripping U.S. gasoline-electric hybrid demand by 2012.

The report, "Is Diesel Set to Boom in the U.S.?",

(<http://www.ricardo.com/download/pdf/R119361S.pdf>) not only forecasts that diesel light-duty vehicle sales will hit 1.5 million units in 2012, but that U.S. diesel sales will outstrip U.S. gasoline-electric hybrids by 300,000 unit sales in 2012.

Reasons: "Similar fuel economy, but substantially lower costs for the [automaker] producer. We believe OEMs share our enthusiasm for diesels: recent months have seen Mercedes, VW, BMW, Nissan and Honda announce plans for 'clean diesel' in the U.S.," the analysts conclude.

"Many OEMs plan to launch hybrid products in the next few years, but this technology faces substantial manufacturing cost penalties, which are unlikely to be eroded even in mass production," the analysts found.

"Diesel has a clear cost advantage over hybrid, even when fitted with the type of complex exhaust after-treatment technologies necessary to meet future, more stringent emissions regulations.

"Diesel already dominates in Europe. The conditions may now be right for a big acceleration in diesel sales in the North American market."

Among the diesel technology providers likely to win from a light-duty diesel surge in the U.S. are Borg-Warner, Denso, Honeywell (Garrett turbochargers), BASF (formerly Engelhard,

makers of exhaust catalysts), IHI, NGK, Emitec, Ibiden, Umicore, Johnson-Matthey, Siemens, Delphi and Denso, the report shows. Continental also could benefit if it succeeds in buying Siemens VDO, the report notes.

“Efforts to raise [vehicle corporate average fuel economy, CAFE] standards in the past, and to expand coverage from [criteria] pollutants to greenhouse gases, have usually been stalled by political lobbying,” the report notes. “But the political mood appears to be shifting – and it looks likely that higher standards are likely at the individual state level (on GHG) and possibly national level (on both GHG and CAFE),” the report says.

But no matter what happens in the U.S. Congress or a new U.S. EPA regulation forcing higher CAFE, “we believe sales of more fuel-efficient vehicles are likely even without legislation,” the report says. “Consumers may opt for more fuel-efficient vehicles as CO₂ emissions, global warming and/or U.S. dependence on foreign oil become ever more topical. Consumer behavior will also ultimately rest on actual and anticipated fuel prices,” which over the past two years had favored gasoline over diesel. Now, diesel is once again cheaper than gasoline in the U.S. retail market.

What’s more, although gasoline-electric hybrids improve fuel economy especially in city stop-and-go driving, “we are ultimately bullish on diesel for one simple reason: cost,” the report found.

“Hybrid powertrains ultimately cost more than diesels, and we do not believe the cost penalty of hybrid will change dramatically even with big increases in production volumes.” The cost advantage especially favors diesels in larger vehicles, they found.

An emissions-compliant U.S. diesel engine in a crossover or SUV “will incur a cost penalty [compared to a comparable, conventional gasoline car] half that of a full hybrid (U.S. \$3,000 versus U.S. \$7,000),” the study found.

“For smaller vehicles, the cost penalty for both powertrain types will be lower, but diesel still has the upper hand. UBS estimates that for a conventional mid-size passenger car (e.g. Toyota Camry, VW Passat), the cost penalty for a diesel will be around \$2,000-\$3,000 and for a full hybrid around \$5,000.”

Ironically, consumers won’t get a quick fuel-savings payback on the higher up-front investment, neither with diesel nor with a gasoline hybrid, the study found.

“In the U.S., a consumer paying the full up-front cost of a clean diesel (e.g. \$4,000 extra for a 4.0 liter vehicle) is unlikely to recoup the extra cost in fuel savings quickly. A U.S. consumer, driving 20,000 miles per year, would save less than \$700 per year by moving from a 25 mpg vehicle to a 35 mpg vehicle.

“However, it is possible that perceived savings (every time the consumer fills up), consumer attitudes (preference for driving a more fuel-efficient vehicle) and automaker pricing decisions (taking some of the cost penalty in the margin, rather than passing it on to the consumer in full) will improve the prospects for fuel-efficient vehicles.”

For example, the study cites a recent Synovate survey showing that 35% of the U.S. population is willing to pay \$3,000 or more for a “green” vehicle of equivalent performance of the baseline car, and 30% willing to pay \$4,000 or more. “Even if these percentages are high by a factor of two, 15% of 2015 U.S. sales of perhaps 20 million vehicles would yield three million units of diesels and hybrids,” the study notes, pointing out that a 15% share “is not far off our own forecast.”

While German automakers (VW, BMW, Daimler) are well advanced in their plans for U.S. EPA emissions-compliant diesel passenger vehicles in the U.S. market, the strong Euro versus the U.S. dollar can hurt profitability, unless more of the diesel manufacturing shifts to North America.

Meantime, while both PSA-Peugeot and Renault are strong in diesel technology, they likewise face unfavorable Euro-dollar exchange rates.

Nevertheless, “we believe it is conceivable that the French may see an opportunity . . . Renault may be better positioned than PSA as it could ‘piggy-back’ the [existing U.S.] Nissan dealer network.”

As for Italy, “Fiat also has plans to bring Alfa Romeo back to the U.S in 2009 [and] diesel could potentially feature in Alfa’s product plans.”

Given current and likely clean-diesel introductions into the U.S. market in coming years, Ricardo sees diesel passenger new-vehicle sales to rise from about 4% in 2009 to about 9% in 2013, mostly light trucks rather than cars. — *Jack Peckham*

● **Dieselization: Cheapest Path to CO₂-Reduction & Gasoline Substitution**

Detroit -- A transportation fuel life-cycle assessment (LCA) by the Natural Resources Canada (NRCan) “GHGenius” model shows that dieselization of the North American light-duty fleet would be by far the cheapest pathway to slash carbon dioxide (CO₂) from transport by 2020.

The study (*SAE 2007-01-1606*) presented to Society of Automotive Engineers 2007 World Congress here, looked at 23 possible vehicle/fuel pathways for cutting CO₂ from “typical” mid-sized passenger vehicles, including well-to-wheel (WTW) analysis.

Compared to using gasoline in a baseline gasoline vehicle, diesel from crude oil used in a comparable diesel car would by far be the cheapest option on a dollars-per-ton basis for cutting CO₂, followed by biodiesel from tallow, “SuperCetane” (refinery hydrotreated bio-oils converted to diesel), Fischer-Tropsch diesel from wood, esterified biodiesel from canola oil, and wider adoption of diesel-electric hybrid vehicles.

While the “GHGenius” model is applicable to Canada, it also contains data for the U.S., Mexico, India and other areas, the authors point out. It is based on Dr. Mark Delucchi’s University of California-Davis “lifecycle emissions model,” with further development by Natural Resources Canada.

The study makes some conservative assumptions about future vehicle and fuel costs, drawing in part from U.S. Energy Information Administration’s 2005 Annual Energy Outlook, which at the time foresaw 2020 crude oil at around \$40 rather than the current \$60/barrel.

Asked what would happen to the conclusions if \$60 crude was the base assumption rather than \$40, NRCan technical advisor and study co-author Jesse Fleming told *Diesel Fuel News*:

“If the price of crude oil was assumed to be US\$60 and all the other parameters in the analysis remained the same, then diesel would still be among low-cost substitutions for gasoline. This is due mainly to the fact that the increased price of crude would also affect the reference: gasoline. Pathways that did not use crude oil as the main feedstock would look more cost-effective.”

The analysis assumed that first-cost premium for diesel cars (versus comparable gasoline cars) if they became more widely available by 2020 would be around \$1,000, while a diesel-electric hybrid would cost about \$4,000 more than a comparable gasoline car.

It also generously assumed that a fuel-cell car in 2020 would cost only \$7,000 more than a comparable gasoline car, although fuel-cell cars today are vastly more expensive than comparable gasoline cars, and many wonder if hydrogen will ever become widely available for refueling such cars.

The study also compared costs for compressed natural gas (CNG) cars, corn-based ethanol cars, and a wide variety of hydrogen sources (coal, gas, electric) for fuel-cell cars.

Of all the options, by far the most expensive for CO₂ reductions were fuel-cell cars, the study shows. — *Jack Peckham*

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